Connecting your Facility to Receive Auto-CPP Event Signals

The purpose of this document is to help facility managers understand the options for their site(s) to receive remote signals of upcoming CPP events. In addition to human readable pager alerts and e-mails, sites in this pilot will receive signals over the Internet that trigger automated sheds of pre-selected electric loads.

Connectivity Option A (CLIR Box). Recommended for all sites.

Site requirements:

1. **Energy Management and Control System (EMCS)**
2. **Ethernet LAN with Access to the Internet (EMCS does not need access the Internet)**

The Client & Logic with Integrated Relay (CLIR) Box is a secure, self-configuring Internet relay. The CLIR box enables the EMCS to receive Auto-CPP signals over the Internet. These signals are translated into relay contacts that are sensed by the EMCS. The EMCS causes the facility to automatically enter preconfigured low energy modes through modifications to the HVAC or lighting systems during the CPP event.

Set-up details:

The CLIR Box device is placed near an EMCS controller.

1) Plug into standard 120 VAC outlet.
2) Plug into standard RJ-45 LAN connection.
3) Hook up low voltage wiring to available digital input terminals on the EMCS. Either one, two or three EMCS digital inputs are used per table 1 below:

CLIR Box is "IT Friendly". It resides inside of the secure enterprise network and "surfs" for CPP event information which is returned on the standard port 80, just like standard Web pages.

CLIR Box Relay #	Description	Timing When Relay is "ON"	Used for:
1	Moderate Shed (real-time)	2:00 PM – 6:00 PM Day of CPP Event	Digital Input Into EMCS
2	High Shed (real-time) Note: Relay #1 also ON in High Shed mode	4:00 PM – 6:00 PM Day of CPP Event	Digital Input Into EMCS
3	CPP-Event Pending (21 Hour advanced notice). Can be used for pre-cooling strategies.	~3:00 PM prior day until end of CPP event*	Digital Input Into EMCS

Table 1 - Function of each relay contact (Option A only).

* If CPP days are called "back-to-back" relay #3 will remain ON constantly until the end of the last day.

Connectivity Option B (Internet Gateway). For sites with advanced EMCSs and programming skills.

Site requirements:

1. **Energy Management and Control System (EMCS) with access the Internet (i.e., facility managers can view the EMCS using an Internet browser).**

2. **Access to computer programming skills.** LBNL provides a software example and template, to be used to create a Web Services software client. Your programmers make minor revisions to the software, as necessary to customize it for your system.

If your site meets these requirements, you should consider using Connectivity Option B (Internet Gateway) to receive remote signals of upcoming CPP events. No new hardware is required for this connectivity option.

Like the CLIR Box, the Internet Gateway software solution is "IT Friendly". It resides inside of the secure enterprise network and "surfs" for CPP event information which is returned on the standard port 80, just like standard Web pages.

Table 2 shows the three discrete Auto-CPP levels that will be published by the DR Automation Server (DRAS) and the associated behavior expected from the Energy Management and Control System (EMCS). CPP events are first published on the DRAS by 3:00 PM the day prior to the event. The entire schedule for the event is published at that time. For the summer 2006 pilot, the schedule and associated price level will always be as shown in table 2.

Auto-CPP Level **(Published on DRAS)**	**Description**	**Time Period**	**Desired Behavior of EMCS**
1.0	Normal Level	All time except CPP events	Normal Operation
3.0	Moderate Level (CPP)	2:00 PM – 4:00 PM	Moderate Shed of Electric Loads
5.0	High Level (CPP)	4:00 PM – 6:00 PM	High Shed of Electric Loads
Binary	CPP-Event Pending (21 Hour advanced notice).	~3:00 PM prior day until end of CPP event*	Can be used for pre-cooling strategies, if desired.

Table 2 Auto-CPP Levels and associated behaviors (Option A only).

For connectivity questions, contact DR Integration Services Co. at: ph.#